

Land administration: configure, pleaseâ€¦!



Having worked in land administration for many years, Esri's Brent Jones has seen all types of projects succeed and fail. The reasons for most of the failures are clear – building an unsustainable and unscalable system, not understanding the total cost of ownership, poor system security, inadequate funding models, lack of local capacity, costly maintenance of custom-built software, and many more. Although there is no golden ticket to success, in this column Brent describes how we can increase our chances of success by learning from these failures.

The end of custom code

For most applications, developing software by writing code is a thing of the past. Modern software platforms have application builders that enable you to build mobile apps, web maps and web apps with just a few keystrokes. There is no longer a reason to hard-code workflows either. Yes, you may do things differently and your legal structure may have requirements that others don't, but that doesn't mean you have to hard-code them. Just like web apps and maps, you can configure workflows and tasks to fit your organization's needs. Remember, every line of code you write needs to be maintained and requires staff. Moreover, when your system is upgraded, all custom code needs to be updated as well. This is a cause of many land system failures. So, unless you have sustained access to a lot of resources, don't code.

Modern systems offer configurability. Whether you are working on valuation workflows, parcel editing or data sharing and publishing, these are all configurable in ArcGIS. Leveraging standards such as the [Land Administration Domain Model](#) (LADM) and Open Geospatial Consortium (OGC) web services makes it relatively simple to configure your land administration workflows. This is key to system sustainability.

Solving solved problems

Thomas Edison once said, "I start where the last man left off". Why do we keep solving solved problems? Instead, we should start with what we know and is already built. Commercial off-the-shelf software (COTS) developers identified common capabilities that all land administration systems need, like parcel editing, and then built the data structures, functionality and workflows, and made their solution configurable so that it fits many organizations' requirements. By using COTS, the total cost of ownership (TCO) is dramatically reduced – no code to maintain, no custom training and you get the benefits of professional support and new capabilities with new software releases, so you can work on unsolved problems specific to your organization.

Most commercial software is built to be scalable, so there is no need to rewrite the software to scale a project from a pilot to an enterprise land administration system. This includes security protocols, user identity management and cloud data management. These capabilities are costly to build and maintain. Large geospatial platforms like ArcGIS have modern security protocols and, as security threats emerge, countermeasures are developed and deployed for all users. It is difficult to imagine how much it would cost to do this effectively in custom-developed software.

The NGO example

Thousands of non-governmental organizations (NGOs) and non-profits use commercial software, particularly ArcGIS. Why? Because they have limited resources and focused missions. Many NGOs are accountable to their donors and need to show results, which usually are not expressed in custom-developed, single-use software. [Cadasta](#), for example, is focused on delivering technical tools and services to document land rights in the most challenging environments around the world. Originally conceived to deliver software tools based on open source, Cadasta realized that the time-consuming creation and maintenance of custom software was not its core mission, yet it was spending more time writing and testing software than serving partners on the ground. Frank Pichel, Cadasta programme manager, said, "Simply put, we couldn't keep up with increasing scale and functionality requests from our partners while maintaining a full open-source infrastructure. Core Esri technology like secure data storage, GIS-based analytics and the ability to use different data sets has enabled our partners to make better decisions and Cadasta to better serve its core challenge – strengthening property rights." Like many other organizations, and not just NGOs, Cadasta has a vision and mission. Originally, developing a software solution was part of that vision, but over time it realized that supporting the complexity, required resources and end-user demands went beyond its capability.

Evolve

When looking at land administration and cadastral systems around the world, the successful ones have several things in common. One notable characteristic is that these systems have evolved over the years to meet changing demands – mandates change, legislation changes, government leadership changes, funding fluctuates and technology advances to name but a few. We can't control all of these

factors, but we can put together a nimble, responsive system that can evolve in line with changing requirements and respond to new opportunities. Hard-coding inflexible systems with the resources to support them in the long term is a recipe for certain failure.

We've all made plenty of mistakes, but isn't it much nicer to learn from others' mistakes rather than your own? We now know what works and what doesn't when we implement, expand and modernize cadastral and land administration systems. So please, don't continue to reinvent the wheel and build unsustainable systems from scratch. Let's learn from the past together and begin where the last man left off, to configure scalable, secure and sustainable land systems

<https://www.gim-international.com/content/article/land-administration-configure-please>
